Dependence Modelling of Financial returns using Generalised Normal Mixtures

Calvin Maina

Kisii University, Kenya.

It has long been known that financial returns are often not normally distributed, but the technical difficulties of dealing with non-normal distributions have often stood on the way of using them in financial modeling. In particular, in dependence modelling of financial returns, using copulas and Normal Mixtures as marginal, for the practical value of risk management, the choice of marginal distribution is key. In this work, generalized normal mixtures are constructed, their properties studied, parameter estimation is achieved using the EM algorithm and application in Risk Management and portfolio optimization considered.

Keywords: Bessel function of the third kind; Normal Mixtures; EM algorithm; generalized hyperbolic distributions; copulas.